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TC 1700 MAIL ROOM
REMARKS

Atty. Dkt. No. 051583-0245

Claims 1-34 are pending in this application. Claims 20-34 have been withdrawn from consideration as directed to non-elected subject matter. Claim 8 has been amended to define applicant's invention with greater particularity. The amendment is fully supported by the specification and no new matter has been added. In view of the amendment and following remarks, Applicants respectfully request reconsideration of the claims and submit that the application is in condition for allowance.

I. Response to Restriction Requirement

In the Office Action of February 13, 2003, a restriction requirement was imposed between the following sets of claims: Claims 1-19 (Group I) drawn to a laminate for use as a battery housing; Claims 20-31 (Group II) drawn to the same; and Claims 32-24 (Group III) drawn to a battery housing employing the claimed laminate. Applicants affirm the provisional election of Group I with traverse.

In the Office Action, the Examiner asserted that the three inventions are related as mutually exclusive species in an intermediate-final product relationship. The Examiner stated that based on MPEP § 806.04(b), third paragraph and MPEP § 806.04(h), "distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product." Office Action, paragraphs 2-4.

However, the MPEP § 803 additionally states that if:

If the search and examination of an entire application can be made without serious burden, the Examiner **must** examine it on the merits even though it includes claims to independent or distinct inventions.

(Emphasis added.)

While making no statement regarding whether the species are patentably distinct, Applicants respectfully submit that the inventions claimed in Groups I, II, and III are closely related and that the search and examination of Groups I, II, and III together would not be a serious burden for the Examiner. The claims of Groups I and II are directed toward a laminate for use as a battery housing. The claims of Group III are directed toward a battery housing comprising the claimed laminate. Each of the claims of Groups I, II, and III require a sealant layer. In each group of claims, the sealant layer is identical and acts as a "barrier to an electrolyte, the sealant layer having an internal surface that is substantially inert to the electrolyte and an external surface." Further, all of the claims of Groups II and III and claims 12-19 of Group I each require absorbent material associated with the sealant layer. Thus, a search of Group I claims would of necessity require a search of Group II and Group III claims. Hence, no savings of Patent Office resources would be realized by enforcing the presently asserted restriction requirement and no serious burden to the Examiner is presented. Accordingly, reconsideration and withdrawal of the requirement for restriction is respectfully requested.

II. Claim Rejections Under 35 U.S.C. § 112, second paragraph

Applicants respectfully traverse the rejections of Claims 1 and 8 under 35 U.S.C. § 112, second paragraph, as being indefinite. Claim 1 was rejected because "the term 'substantially' (third line of claim) prevents the scope of the claim from being ascertained. What is 'substantially inert'?" Office Action, paragraph 10. Applicants respectfully submit that one skilled in the art would understand the meaning of the phrase "substantially inert" based on the plain and ordinary meaning of the term, "substantially," which is "being largely but not wholly that which is specified." Merriam Webster's Collegiate Dictionary, 10th ed., 1997, page 1174 (a copy of which is enclosed). Thus, in Claim 1, the sealant layer has an internal surface that is nearly completely inert to the electrolyte. As stated in the MPEP, "the fact that claim language, including terms of degree, may not be precise, does not automatically render the claim indefinite

under 35 U.S.C. § 112 (second paragraph).” MPEP § 2173.05(b). Moreover, in every case discussed in the MPEP, the term “substantially” was held to be definite. *Id.*, under heading “D. ‘Substantially.’” Accordingly, Applicants respectfully request the Examiner withdraw this rejection.

Claim 1 was further rejected for reciting “the sealant layer is capable of acting as a barrier to an electrolyte” because “the scope of the property intended to be recited by this phrase cannot be ascertained.” Office Action, paragraph 10. Applicants respectfully submit that one skilled in the art would understand the meaning of the phrase at issue in light of the disclosure provided in the application. The specification teaches at paragraph 27, “an inner sealant layer that acts as a barrier to the escape of electrolyte materials and their decomposition products such as hydrogen fluoride.” Application, page 6. Paragraph 30 enumerates a number of polymers that may serve as the sealant layer. *Id.*, page 8. Paragraph 33 discloses “the sealing layer which will be in direct contact with the cell components including an electrolyte when the laminate is fashioned into a battery housing should be substantially inert to electrolyte reactivity and should not react substantially with an electrolyte at any given cell temperature.” *Id.*, page 9. Thus, one skilled in the art would plainly understand the phrase at issue to mean that the sealant layer must contain the chemical components of the battery and prevent the electrolyte from diffusing through the sealant layer. Applicants submit that Claim 1 meets the requirements of 35 U.S.C. § 112, second paragraph, and requests withdrawal of this rejection. If the Examiner has more specific concerns regarding the scope of the phrase at issue, he is invited to make them known to Applicants so that Applicants may address them more fully.

Claim 8 was rejected as indefinite for lack of an antecedent basis to the phrase “moisture barrier layer.” Office Action, paragraph 10. Applicants have amended Claim 8 to delete the word “moisture.” The specification fully supports this amendment because one skilled in the art would understand the terms “moisture barrier layer” and “barrier layer,” as used in the present application, to be synonymous. See, e.g., Application, paragraph 10 (teaching that the present

invention provides a laminate for use as a battery housing made up of a sealant layer and a barrier layer and that “the barrier layer will comprise two layers of metal foil”); and paragraph 27 (teaching that “in one embodiment of the invention, the battery housing or package is a flexible laminate comprising a pair of metal foils that act as a moisture and/or electrolyte component barrier . . .”)(emphasis added). Thus, Applicants respectfully request this rejection be withdrawn.

III. Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1-5 and 7-17 were rejected under 35 U.S.C. § 103(a) as being obvious over Chaloner-Gill (U.S. Patent No. 5,445,856) in view of Kurfman (U.S. Patent No. 4,612,216). Claim 6 was rejected under 35 U.S.C. § 103(a) over Chaloner-Gill in view of Kurfman and further in view of Sasaki (U.S. No. 6,277,516). Claims 18 and 19 were rejected as obvious over Chaloner-Gill in view of Kurfman and in further view of Shores (U.S. No. 5,401,536). Applicants respectfully traverse these rejections.

In the Office Action, Chaloner-Gill was characterized as teaching “a laminate for protecting components of an electro-chemical cell such as a lithium battery and that the laminate protects from attack and/or passivation from electrolytes and moist air.” Office Action, page 5, paragraph 12. The Office Action further states that Chaloner-Gill teaches “that the laminate comprises an outer protective layer (item 40), adhesive layer (item 50), metal foil layer (item 44), and sealant layer (item 36) (col. 4, line 63 - col. 5, line 43 and Figure 5).” *Id.* The Office Action goes on to state that “Chaloner-Gill failed to teach that the laminate comprises first and second metal layers where the metal layers are adjacent to each other. Kurfman, however, discloses a metal/metal/polymer laminate having two metal layers intimately adhere to each other (col. 2, lines 25-28). Kurfman discloses that the laminate exhibits excellent barrier to moisture transmission (col. 1, lines 54-62).” *Id.*, page 6, paragraph 12. Thus, the Examiner concludes “[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to have inserted a second metal layer between the metal layer (item 44) and sealant layer

(item 36) or between the metal layer (item 44) and the adhesive layer (item 50) of Chaloner-Gill in order to improve the barrier to moisture transmission as taught by Kurfman.” Office Action, page 6, lines 15-18. Applicants respectfully disagree with this conclusion.

Because Kurfman does not teach the dual metal layers of the present invention, the combination of Chaloner-Gill and Kurfman fail to establish a *prima facie* case of obviousness. Kurfman is directed to duplex metal alloy/polymer composites for the purpose of solving the problem of “rupture and/or separation of the metal from the polymer” in metalized films upon shaping/forming articles. Kurfman, col. 1, lines 30-35 and 50-53. Kurfman’s solution is to prepare a segregated metal alloy of at least two metals adhered to the surface of a polymer layer. *Id.*, col. 3, lines 21-35, 50-62 and col. 4, lines 13-25, 41-50. As one skilled in the art would appreciate, this segregated alloy is, in fact, a single metal layer with an abrupt change in composition from one side of the layer to the other. *See Id.*, col. 5, lines 37-41.

Kurfman discloses that the two metal layers, “when taken together, comprise a duplex alloy structure.” *Id.*, col. 6, line 60. The segregated alloy is formed first by depositing a metal or metal alloy on the polymer. *Id.* Col. 2, lines 15-25. A second metal or metal alloy with a melting point slightly lower than that of the first is then deposited on the first metal layer. *Id.*, lines 25-34. The metal alloy melting points are required to be within a certain percentage (e.g., 85-150%) of the forming temperature of the polymer (similar to the melting point of the polymer). *Id.* Upon forming the laminate, heat and pressure cause the polymer to deform, i.e., soften and stretch, and the high melting metal stretches and begins to form micro cracks. The low melting metal, more mobile because it is closer to its melting point, diffuses into these micro crack regions and prevents the formation of a crack void. As a result of this metal diffusion, a metal alloy is formed within the higher melting metal. *Id.*, col. 8, lines 26-43. Hence, one of ordinary skill in the art would recognize that the metal alloy layers of Kurfman are so intimately adhered to each other as to constitute a single layer.

In contrast, the present invention, as defined by Claims 1-19, requires a barrier layer having two discrete metal foils adjacent to each other. This requirement stems from the problem solved by the invention. As disclosed in paragraph 28 of the specification, metal foils have pinholes in them that allow solvent to leak from the packaging, thus causing battery failure due to corrosion-induced rupturing at this point. While thicker foil usually reduces the quantity of pinholes, the likelihood of foil cracking increases. Thicker foils are also more difficult to heat seal due to thermal conduction of heat by the thicker metal. As demonstrated by the comparative example, a laminate made from two thin foils with a combined metal thickness of 18 microns had a marked improvement in barrier capability compared to a laminate made from a single 25 micron thick foil. Application, paragraph 56. This example dramatically illustrates that the improvement in performance depends on the use of two distinct foils in which pinholes do not align with one another.

This reduction in pinholes is not possible in Kurfman's metal layer because in metalized films, the pinholes are the result of a defect on the surface of the polymer film that inhibits the attachment of the deposited metal to the film. When the second metal layer is deposited, there is still no deposition of metal at the pinholes because the original defect is still present. Another metal layer is not overlaid onto the first metal layer to hide the defect; merely more metal atoms are deposited in its vicinity. Thus, not only does Kurfman fail to teach two discrete metal foils as a barrier layer, but it does nothing to address the problem solved by the present invention. Hence, a *prima facie* case of obviousness has not been established for any claim wherein the rejection relies on Kurfman. Applicants respectfully request withdrawal of this ground of rejection.

IV. Conclusion

In view of the above remarks and amendments, reconsideration and favorable action on all claims is respectfully requested. In the event that any issues remain to be resolved in view of

In re application of
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this communication, the Examiner is invited to contact the undersigned by telephone so that a prompt disposition of this application can be achieved.

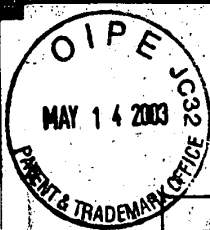
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Library of Congress Cataloging in Publication Data
Main entry under title:

Merriam-Webster's collegiate dictionary. — 10th ed.

p. cm.

Includes index.

ISBN 0-87779-708-0 (unindexed : alk. paper). — ISBN 0-87779-709-9 (indexed : alk. paper). — ISBN 0-87779-710-2 (deluxe : alk. paper). — ISBN 0-87779-707-2 (laminated cover).

1. English language—Dictionaries. I. Merriam-Webster, Inc.

PE1628.M36 1997

423—dc20

96-42529

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